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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	:	Customer Number: 46320
	:	
Timo SALO, et al.	:	Confirmation Number: 1045
	:	
Application No.: 10/026,387	:	Group Art Unit: 2162
	:	
Filed: December 21, 2001	:	Examiner: A. Ly
	:	
For: DECENTRALIZED MANY TO MANY RELATIONSHIP MANAGEMENT IN AN OBJECT PERSISTENCE MANAGEMENT SYSTEM		

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed August 30, 2006, wherein Appellants appeal from the Examiner's rejection of claims 1, 5, 8, and 11.

I. REAL PARTY IN INTEREST

This application is assigned to IBM Corporation by assignment recorded on December 21, 2001, at Reel 012408, Frame 0810.

II. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals and interferences.

III. STATUS OF CLAIMS

Claims 1-11 are pending in this Application. Claims 2-4, 6-7, and 9-10 have been indicated as being allowable. Claims 1, 5, 8, and 11 have been five-time rejected. It is from the multiple rejection of claims 1, 5, 8, and 11 that this Appeal is taken.

IV. STATUS OF AMENDMENTS

The claims have not been amended subsequent to the imposition of the Fifth Office Action dated May 30, 2006 (hereinafter the Fifth Office Action).

V. SUMMARY OF CLAIMED SUBJECT MATTER

Referring to Figure 1 and independent claim 1, in an object persistence management system 100, a many-to-many relationship manager is disclosed. The manager includes a plurality of related objects 108, 110, a junction table 102, and a plurality of corresponding decentralized links 104, 106 (page 11, line 16 through page 12, line 1 of Appellants' disclosure; see also page 14, lines 4-10 regarding the decentralized nature of links). The junction table 102 stores relationships between the related objects 108, 110 (page 12, lines 1-3). Each of the plurality of links 104, 106 correspond to one of the objects 108, 110 (page 11, lines 18-21). Also, each of the links 104, 106 persist state information for a corresponding object 108, 110 in an associated object table 112, 114 (page 11, lines 20-23). Moreover, each of the links 104, 106 manage the junction table 102 responsive to changing relationships with others of the related objects 104, 106 (page 12, lines 5-10).

Referring to Figure 2 and independent claims 5 and 8, a method of managing a many-to-many relationship in an object persistence management system is disclosed. In block 202, a

relationship change with a related object is detected (page 12, lines 20-21). In blocks 206/208, a directive specifying a management operation for changing the relationship in a junction table is stored in a buffer (page 13, lines 4-11). In block 212, a search is conducted for an opposite directive in a buffer associated with the related object (page 13, lines 15-18). In blocks 214, 216, the stored directive is performed only if the opposite directive has not been stored in the buffer associated with said related object (page 13, lines 19-22).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claim 1 was rejected under the 35 U.S.C. § 101; and
2. Claims 1, 5, 8, and 11 were rejected under 35 U.S.C. § 103 for obviousness based upon Kawai, U.S. Patent No. 5,717,924 in view of Bernstein et al., U.S. Patent Publication No. 2004/0243605 (hereinafter Bernstein).

VII. ARGUMENT

THE REJECTION OF CLAIM 1 UNDER 35 U.S.C. § 101

For convenience of the Honorable Board in addressing the rejections, claim 1 stands or falls alone.

On page 2 of the Fifth Office Action, the Examiner asserted the following with regard to claim 1:

Claim 1 is rejected under 35 U.S.C. 101: Because claim 1 is lacking an appropriate **storage medium** and a **data structure (an example of functional descriptive material, per se) within an environment is being claimed**, data structure within an object persistence management system, and in the body of the claim, all is non functional descriptive materials, except a functional descriptive material, "managing said junction table". This functional descriptive material is not a manipulation function. (emphasis in original)

Appellants are unclear as to the Examiner's basis for rejection claim 1. Appellants are unaware of any requirement for a storage medium or a data structure with a claim, as asserted by the Examiner.

An invention is patentable when applied in "useful" way

In State Street Bank and Trust Company v. Signature Financial Group, Inc.,¹ the court set forth the criteria for establishing statutory subject matter under 35 U.S.C. § 101 as follows:

The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to —process, machine, manufacture, or composition of matter—but rather on the essential characteristics of the subject matter, in particular, its practical utility. Section 101 specifies that statutory subject matter must also satisfy the other "conditions and requirements" of Title 35, including novelty, nonobviousness, and adequacy of disclosure and notice. See In re Warmerdam, 33 F.3d 1354, 1359, 31 USPQ2d 1754, 1757-58 (Fed. Cir. 1994). For purpose of our analysis, as noted above, claim 1 is directed to a machine programmed with the Hub and Spoke software and admittedly produces a "useful, concrete, and tangible result." Alappat, 33 F.3d at 1544, 31 USPQ2d at 1557. This renders it statutory subject matter, even if the useful result is expressed in numbers, such as price, profit, percentage, cost, or loss.

Thus, as articulated above, the test for determining whether subject matter is patentable under 35 U.S.C. § 101 involves deciding if the subject matter produces a "useful, concrete, and tangible result."

Appellants have established utility

A discussion of the procedural considerations regarding a rejection based upon lack of utility (i.e., 35 U.S.C. § 101) is found in M.P.E.P. § 2107.02. Specifically, M.P.E.P. § 2107.02(I) states that:

regardless of the category of invention that is claimed (e.g., product or process), an applicant need only make one credible assertion of specific utility for the claimed invention to satisfy 35 U.S.C. 101 and 35 U.S.C. 112

¹ 149 F.3d 1368, 47 USPQ2d 1596 (Fed Cir. 1998).

Referring to the second full paragraph on page 7 of the disclosure and within the "Summary of the Invention" section, Appellants stated the following:

Each link can correspond to one of the objects. Furthermore, each link can persist state information for the corresponding object in an associated object table. Finally, each link can manage the junction table responsive to changing relationships with others of the related objects. Importantly, as the present invention distributes the management of the junction table, a counter-operation management protocol can be provided which can resolve conflicts which arise in the management of the junction table in response to changing relationships among their associated objects.

Appellants, therefore, have asserted a credible utility (i.e., managing a junction table and resolving conflicts that arise during the management of the junction table).

As noted in M.P.E.P. § 2107.02(III)(A), the Court of Customs and Patent Appeals in In re Langer² stated the following:

As a matter of Patent Office practice, a specification which contains a disclosure of utility which corresponds in scope to the subject matter sought to be patented must be taken as sufficient to satisfy the utility requirement of § 101 for the entire claimed subject matter unless there is a reason for one skilled in the art to question the objective truth of the statement of utility or its scope. (emphasis in original)

Since a credible utility is contained in Appellants' specification, the utility requirement of 35 U.S.C. § 101 (i.e., whether the invention produces a useful, concrete, and tangible result) has been met.

On page 2 of the Fifth Office Action, the Examiner also objected to the specification with regard to claim 8, asserting that the specification "[fails] to provide proper antecedent basis for the subject matter." As noted by the examiner the terms and phrases used in the claims must find clear support or antecedent basis in the description so that meaning of the terms in the claims may be ascertainable. Appellants are unclear as to how or why the term "a machine readable

² 503 F.2d 1380, 1391 USPQ 288, 297 (CCPA 1974).

storage" could be considered by the Examiner to be unclear. The term, "a machine readable storage," itself provides sufficient and clear support for the meaning of the term.

**THE REJECTION OF CLAIMS 1, 5, 8, AND 11 UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS
BASED UPON THE KAWAI IN VIEW OF BERNSTEIN**

For convenience of the Honorable Board in addressing the rejections, claim 1 stands or fall alone, and claim 8 and 11 stand or fall together with independent claim 5.

Claim 1, in part, recites the following limitations:

- a plurality of related objects;
- a junction table storing relationships between said related objects.

To teach the plurality of related objects, the Examiner referred to Fig. 5 of Kawai. With regard to the claimed "junction table," in the Third and Fourth Office Actions, the Examiner admitted that Kawai does not teach the claimed junction table. However, on page 4 of the Fifth Office Action, the Examiner has recanted this previously presented position by asserting the following:

Kawai teaches data migration management in many-to-many relationship between tables or related objects in the relational database system and reflecting the change relationships of the related objects (see fig. 5 and 12). Also Kawai teaches a third temporary table includes the primary key of source table as foreign key of the third temporary table and a surrogate key value that form the primary key of the third temporary table as a kind of junction table using for changing relationships of objects in the related tables and object links that define relationships between related object in the object model (fig. 12B and col. 3, lines 46-67). Kawai does not clearly teach managing said junction table responsive to changing relationships with others of said related objects. (emphasis added)

At the outset, Appellants note that the Examiner's cited passage of column 3, lines 46-67 is a description of the disclosure found in U.S. Patent No. 5,548,749 (also referred to as the '997 patent application). A review of this passage, however, fails to yield a description of the Examiner's asserted third temporary table, which allegedly acts "as a kind of junction table."

A discussion of a temporary table, however, is found in column 18, lines 1-14 of Kawai, which for ease of reference, is reproduced below:

To represent the object model change, the data must be moved from the two source tables 530 and 550 into the destination table 540. This is accomplished by creating a temporary table (not shown) that receives any existing data that may be stored in the destination table (i.e., the data stored in the column labeled "Soc.sub.-- Sec.sub.-- No" from the table 540), as well as the data stored in the columns labeled "Phone" and "Name" from the source tables 530 and 550, respectively. After the data has been moved to the temporary table, the columns labeled "Phone" and "Name" of the tables 530 and 550 can be deleted from the database. The original table 540 is dropped, a new table 540' is created and the data from the temporary table are copied into the new table 540'. Finally, the temporary table is deleted.

A discussion of the "third temporary table," "surrogate key value," "source table," etc. are also found in column 27, lines 46-57. Unlike the claimed junction table, which stores relationships between the plurality of related objects, as described in Kawai, the third temporary table is used as a "template for the modified destination table."

As apparent from these teachings, the temporary table taught by Kawai does not store relationships between related objects (i.e., corresponding to the claimed junction table). Instead, the temporary table taught by Kawai is used in the process of transferring data from two source tables into a destination table. As already noted in the first and second full paragraphs on page 4 of Appellants' disclosure, the use of a junction table to store many-to-many relationship information is known in the art. In comparing the description of the known junction table in Appellants' disclosure to the temporary table taught by Kawai, it is readily apparent that the two are not comparable; and thus, Kawai fails to teach or suggest the claimed junction table.

Claim 1, in part, further recites the following limitations:

a plurality of corresponding decentralized links, each said link corresponding to one of said objects, each said link persisting state information for said corresponding object in an associated object table, and managing said junction table responsive to changing relationships with others of said related objects.

On page 4 of the Fifth Office Action, the Examiner asserted that Kawai teaches these limitations except that "Kawai does not clearly teach managing said junction table responsive to changing relationships with others of said related objects."

Initially, Appellants note that the Examiner has failed to clearly identify the claimed "decentralized links." In this regard, the Examiner's rejection under 35 U.S.C. § 103 fails to comply with 37 C.F.R. § 1.104(c).³ Although the Examiner cites Figure 12 and several passages within Kawai, the Examiner has failed to specifically assert what features correspond to the claimed decentralized links and failed to explain why the Examiner believes these links would be interpreted by one having ordinary skill in the art as being decentralized.

Appellants also note that the Examiner has failed to properly ascertain the differences between the prior art and the claims in issue. Claim 1 specifically recites that "each link ... managing said junction table responsive to changing relationships with others of said related objects." However, the Examiner did not correlate the "managing said junction table ... " with

³ 37 C.F.R. § 1.104(c) provides:

In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.

the claimed "each link." The failure of the Examiner to properly identify all the limitations not disclosed by Kawai manifests itself in the Examiner's obviousness analysis.

With regard to the teachings of Bernstein and the asserted motivation to combine, on page 4 and 5 of the Fifth Office Action, the Examiner asserted:

However, Bernstein teaches manipulating/changing on the relationships of related objects (sections 0009, 0013, 0027, 0051, and 0110).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Kawai with the teachings of Bernstein. One having ordinary skill in the art would have found it motivated to utilize the use of managing/changing the relationships of related objects by adding or removing the link/relationship of objects as disclosed (Bernstein's sections 0051 and 0110), into the system of Kawai for the purpose of having a third temporary table stored the links or relationships between related object. The motivation being to provide relationship between objects in order to assist in object navigation, thereby, reducing the amount of time for creating or navigating from one object to another object based on relationship (Bernstein's sections 0003-0006 and 0010-0013).

Appellants respectfully submit that the Examiner's analysis is deficient on multiple levels. A first and fatal deficiency is that the Examiner does not even allege the combination of Kawai and Bernstein teach or suggest all the limitations of the claimed invention. Specifically, the Examiner does not assert that the proposed combination teaches or suggests that "each link ... managing said junction table responsive to changing relationships with others of said related objects."

Moreover, although the Examiner's analysis includes two motivations to combine, neither of these asserted motivations would have led one having ordinary skill in the art to arrive at the claimed invention. First, the Examiner asserted that "[o]ne having ordinary skill in the art would have found it motivated to utilize the use of managing/changing the relationships of related objects ... for the purpose of having a third temporary table stored the links or relationships between related object." A third temporary table, however, as alleged by the Examiner on page 4

of the Fifth Office Action, is already present in Kawai. In other words, the Examiner is asserting that it would have been obvious to modify Kawai in view of Bernstein for the purpose of providing a feature already present in Kawai. In this regard, Appellants respectfully submit that the Examiner's asserted motivation to combine is nonsensical.

The Examiner's second asserted motivation to combine is "to assist in object navigation, thereby, reducing the amount of time for creating or navigating from one object to another object based on relationship." The Examiner's asserted motivation, however, only motivates the creation of a table that tracks relationships between objects. As already noted above, the use of a junction table to store relationship information is known in the art. There is, however, no motivation asserted by the Examiner that would lead one having ordinary skill in the art to arrive at the claimed "each link ... managing said junction table responsive to changing relationships with others of said related objects." Thus, for the reasons stated above, Appellants submit that the Examiner has failed to establish a prima facie case of obviousness.

Claim 5, in part, recites the following limitations:

searching for an opposite directive in a buffer associated with said related object; and,

performing said stored directive only if the opposite directive has not been stored in said buffer associated with said related object.

In the paragraph spanning pages 5 and 6 of the Fifth Office Action, the Examiner acknowledged Kawai fails to teach these limitations. Moreover, in the first and second full paragraphs on page 6 of the Final Office Action, the Examiner asserted the following:

However, Bernstein teaches searching or retrieving on specific types of relationships to identify objects in the structured of related objects (sections 0008 and 0066); accessing or performing computer software for managing collections of related objects (sections 0009, 0027, 0042 and 0084).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Kawai with the teachings of Bernstein. One having ordinary skill in the art would have found it motivated to utilize the use of managing/changing the relationships of related objects by adding or removing the link/relationship of objects as disclosed (Bernstein's sections 0051 and 0110), into the system of Kawai for the purpose of having a third temporary table stored the links or relationships between related object. The motivation being to provide relationship between objects in order to assist in object navigation, thereby, reducing the amount of time for creating or navigating from one object to another object based on relationship (Bernstein's sections 0003-0006 and 0010-0013).

Appellants note that this obviousness analysis is identical to the obviousness analysis presented with regard to claim 1 and, thus, inherits the same deficiencies previously identified by Appellants. Moreover, this obviousness analysis is completely unrelated to the claim at issue (i.e., claim 5) or the limitations that the Examiner has admitted are not disclosed by Kawai. Claim 5, at least in part, recites substantially different limitations than the limitations recited in claim 1 yet the Examiner's analysis does not recognize these differences. Thus, for the reasons stated above, Appellants submit that the Examiner has failed to establish a prima facie case of obviousness.

Conclusion

Based upon the foregoing, Appellants respectfully submit that the Examiner's rejections under 35 U.S.C. §§ 101, 103 based upon the applied prior art is not viable. Appellants, therefore, respectfully solicit the Honorable Board to reverse the Examiner's rejections under 35 U.S.C. §§ 101, 103.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due under 37 C.F.R. §§ 1.17, 41.20, and in

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connection with the filing of this paper, including extension of time fees, to Deposit Account 09-0461, and please credit any excess fees to such deposit account.

Date: October 30, 2006

Respectfully submitted,

/Scott D. Paul/

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VIII. CLAIMS APPENDIX

1. In an object persistence management system, a many-to-many relationship manager comprising:

a plurality of related objects;

a junction table storing relationships between said related objects; and,

a plurality of corresponding decentralized links, each said link corresponding to one of said objects, each said link persisting state information for said corresponding object in an associated object table, and managing said junction table responsive to changing relationships with others of said related objects.

5. A method of managing a many-to-many relationship in an object persistence management system comprising the steps of:

detecting a relationship change with a related object;

storing a directive in a buffer, said directive specifying a management operation for changing said relationship in a junction table; and,

searching for an opposite directive in a buffer associated with said related object; and,

performing said stored directive only if the opposite directive has not been stored in said buffer associated with said related object.

8. A machine readable storage having stored thereon a computer program for managing a many-to-many relationship in an object persistence management system, the computer program comprising a routine set of instructions for causing the machine to perform the steps of:

detecting a relationship change with related object;
storing a directive in a buffer, said directive specifying a management operation for changing said relationship in a junction table;
searching for an opposite directive in a buffer associated with said related object; and,
performing said stored directive only if the opposite directive has not been stored in said buffer associated with said related object.

11. The machine readable storage of claim 8, wherein both the directive and the corresponding opposite directive are unexecuted.

IX. EVIDENCE APPENDIX

No evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 of this title or of any other evidence entered by the Examiner has been relied upon by Appellants in this Appeal, and thus no evidence is attached hereto.

X. RELATED PROCEEDINGS APPENDIX

Since Appellants are unaware of any related appeals and interferences, no decision rendered by a court or the Board is attached hereto.